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TITLE : ANTIREFLECTION FILM AND IMAGE DISPLAY DEVICE USING THE SAME

ABSTRACT : PROBLEM TO BE SOLVED: To improve the film strength and durability of a low-refractive index layer and to obtain high anti-reflection efficiency by strictly regulating the film thicknesses and refractive indices of respectively layers.

SOLUTION: A middle-refractive index layer, high-refractive index layer and low-refractive index layer are successively formed from a base material side toward an air surface on the front surface of a transparent base material. The middle-refractive index layer contains the metal oxide selected from aluminum, etc., and the high-refractive index layer contains titanium oxide. The low-refractive index layer contains particulates consisting of a polymer of a fluorine-contained monomer and microvoids which do not scatter light. The refractive indices and film thicknesses of the respective layers are in ranges of the middle-refractive index layer: $n3=1.60\times1.70$, $h\lambda/4\times0.8<n3d3<h\lambda/4\lambda1.2$, the high-refractive index layer: $n2=1.90$ to 2.20, $h\lambda/4\times0.8<n2d2<h\lambda/4\times1.2$, the low-refractive index layer: $n1=1.37$ to 1.46, $h\lambda/4\times0.8<n1d1<h\lambda/4\times1.2$, where (h) and (k) respectively denote 1, 2 or 3 and (n) and (d) respectively denote the refractive indices and layer thicknesses (nm) of the respectively refractive index layers.